

REMOTE VIDEO CAMERAS INSTALLED AT FRENCH FRIGATE SHOALS

Marc Rice, Director, Sea Turtle Research Program

The remote Northwestern Hawaiian Islands are a U.S. National Wildlife Refuge and home to several rare and endangered species of wildlife. The green turtle, Hawaiian monk seal, many species of sea birds, and a few species of land birds call these remote atolls home during all or part of their life.

French Frigate Shoals is an 18-mile long semicircular atoll about 480 miles northwest of Honolulu and is composed of a dozen or so small sand islands with a total acreage of only 70 acres. Tern Island is the site of the old Coast Guard station and is occupied today by U.S. Fish and Wildlife Service (FWS) personnel who manage the refuge. Staff members travel from islet to islet as time and weather allow studying and monitoring the wildlife, collecting and removing marine debris, and closely monitoring the

Cam” and control software are designed and built by SeeMore Wildlife Systems, which has deployed many similar systems to monitor wildlife in other parts of the world. The East Island project was conceived and funded by the NMFS.

Over the course of one week, the team put two cameras on a 65-foot pole in the center of East Island. The pole is left over from the days when East Island was a Coast Guard LORAN station. One pan-tilt and zoom (PTZ) camera is at the 65’ level and one is at the 40’ level on the pole; both cameras can be operated independently to cover the entire island. The video signals are sent wirelessly seven miles to Tern Island where the resident researchers are able to send signals to the cameras to point and zoom as necessary. Both cameras are assigned PTZ positions that are run every two hours.

that observations can be made by anyone with access to the Internet. The whole system then could be used not only for research and monitoring, but also for education and outreach. The team was extremely gratified and grateful for the enthusiasm and support of the FWS personnel at Tern Island. As the project progressed, the excitement grew. When we had “first light” we were all transfixed by the wonderful images we had of East Island. The ideas flew around the room about how the technology could be used to support conservation efforts on the atoll and, eventually on other islands throughout the archipelago.

Scrambling down to the last minute to get everything done, the team boarded the plane on May 30 and flew back to Honolulu. The images taken by the remote video cameras on East island will be copied onto CDs and VHS tapes and sent back to George Balazs at NMFS for review and study until the satellite connection is made. This is just the beginning!



L to R: Konrad Schaad, Daniel Zatz, George Balazs, Marc Rice, and the East Island pole.

critically endangered Hawaiian monk seal.

East Island, a 900-meter-long sand island seven miles southeast of Tern Island, is the major nesting beach for the Hawaiian green turtle population. In fact, nearly 90 percent of all nests are laid on the islands of the atoll.

On May 23, George Balazs of the Pacific Islands Fisheries Science Center of the U.S. National Marine Fisheries Service (NMFS), Daniel Zatz and Konrad Schaad of SeeMore Wildlife Systems, Inc., and I flew to Tern Island to install two remote video cameras on East Island in a first-of-its-kind effort to monitor the nesting and basking activity of green turtles on this important sand island. The “SeaTurtle

At each position, a still digital picture is taken and stored for later viewing. In this way, the entire island is monitored every two hours during the day, seven days a week.

Using the cameras, researchers and wildlife managers hope to count the number of turtle nests that occur each night, count and locate the basking green turtles, study predation on hatchlings, study island erosion, monitor and evaluate the monk seal population, observe bird behavior, and check for marine debris that might endanger wildlife. There are applications for this video surveillance being suggested daily and there will undoubtedly be more as time passes.

The next step is to have the video signals sent to the main islands via satellite so

What's Next The French Frigate Shoals project allows HPA to continue to develop remote video monitoring capabilities for present and future research projects, e.g., the school is continuing the remote video monitoring program at Kiholo Bay on the Big Island's west side and is developing a proposed remote underwater video project to study behavior at cleaning stations where turtles come to be “groomed.”

Students will have access to the data gathered with the video cameras at French Frigate Shoals for the school's basking behavior research that is centered at Kiholo. Our ability to use this kind of technology is enhanced by our association with these professionals. Students gain understanding and hands-on experience working with remote/wireless video projects—not only in sea turtle research but also in other content areas.

HPA's participation in front-line use of technology for scientific research provides opportunities for the school and its students to join in field research that is normally reserved for university or even graduate-level students.

Our understanding of remote video is being used in other areas such as video monitoring of the student center construction and the sea turtle monitoring project at Mauna Lani Bay Hotel. All of these projects and research are fostered and guided by George Balazs of the Honolulu Laboratory of the NMFS.—MR